calibration means for compensating differences among the output values of said light detector for each said combination, said calibration means providing similar output levels of said light detectors for said test vials having identical compositions of said media and said dye material;

a driver means for separately driving each said light source at a specific energy level;

a processor means for controlling said driver means;

an algorithm embedded in said processor means, providing compensated output values of said light detectors and applying a mathematical transformation to the output of said light detectors, to reduce parametric differences among the output values of said light detectors resulting from the combined performance differences among said light source and light detector combinations;

said algorithm comprising [The instrument as in any of the claims 2-3 wherein said algorithm comprises] the formula:

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$$Y = X(U-L)/(OL-LL) + U-OL(U-L)/(OL-LL)$$

Wherein:

X is the output from said light source;

Y is said compensated value;

U is a desired maximal level common to all said compensated levels;

L is a desired minimal level common to all said compensated levels;

OL is the output of said light detector receiving energy directly from said light source when said test vial is being removed; and

LL is the output of said light detector when said light source is driven by said driver means at a level representing the minimal energy obtained from said light detector for any of said test vials.